



CITY OF IMPERIAL BEACH NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

Adopted by City Council
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EXECUTIVE SUMMARY

Throughout the City of Imperial Beach, vehicular traffic on neighborhood streets is a sensitive, but important, issue for residents. Routine speeding, abnormally high traffic volumes, and consistent failure to obey traffic control devices are examples of frustrating and potentially dangerous events that can be observed on a daily basis and cause residents to become alarmed about the safety of their neighborhoods and quality of life. When the tranquility of a residential neighborhood is disrupted regularly by drivers speeding and/or trying to find short-cuts, concerned citizens become frustrated and contact City officials for solutions.

Similar problems in cities throughout the country have inspired a group of engineering solutions called traffic calming measures. These are traffic engineering methods of reducing vehicle speeds or discouraging cut-through traffic. With traffic calming in mind, the City Council has approved a citizen-based approach to managing traffic issues on residential streets and the formulation of a formal process for handling requests for traffic calming measures. The intent is to institute a more comprehensive approach to neighborhood traffic calming based on similar programs in other cities.

The first requirement of the process is the collection of objective traffic data to provide a baseline of existing traffic conditions at the proposed site. The second requirement is the support of residents in any neighborhood where such traffic calming is requested. Third, the calming measures must meet with the approval of emergency agencies concerned about response times, as well as the needs of other utilities whose large vehicles could be adversely affected by traffic calming measures. Finally, residents must be willing to live with the actual traffic calming measures designed to slow traffic and reduce cut-through traffic volumes in their neighborhood.

The program is divided into three phases. The first phase involves data gathering, investigation of the severity of the problem through a ranking system, and implementation of simple measures such as improved signage or striping. If the first phase does not prove effective, the second phase is a more intense study of the traffic problems and eligibility determination. In the third phase the stakeholders are met with, engineering solutions are developed, the preferred solution is chosen by the stakeholders; funding is allocated and the traffic calming measures are installed. After the measures have been installed further data is collected to assess their effectiveness.

CITY OF IMPERIAL BEACH NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

INTRODUCTION

Increasingly, on many neighborhood streets Imperial Beach residents are faced with the presence of speeding vehicles and/or undesirable cut-through traffic. In the past several years, Imperial Beach streets have experienced escalating traffic impacts due to demographic changes and population growth in the surrounding communities. It is not surprising, therefore, that an increasing number of citizens have expressed concerns to City officials, the Sheriff Department, and Department of Public Works staff about these traffic problems. Requests for traffic calming measures and increased Sheriff enforcement of speed limits and traffic control devices are growing at a rate that is stretching the City's capacity to manage the problem effectively, which has created the need for a formal set of procedures for dealing with neighborhood traffic issues. Imperial Beach residents are not unique in voicing such concerns. Cities throughout the United States have struggled with the issue of escalating traffic speeds and volumes on residential streets. As a result, citizens have reacted by asking that their neighborhood quality of life be improved through a reduction of vehicle speeds and volume and that safety thus be enhanced. At issue are the simple pleasures of being able to walk or ride bicycles through their neighborhoods without jeopardizing their safety, a key factor in neighborhood livability.

"Livable" cannot be precisely defined as it relates to community or neighborhood. However, the residents' expectation that fewer vehicles should be speeding down neighborhood streets is an indication of their desire to reside in a livable neighborhood. Characteristics of such a desirable neighborhood include:

- a sense of community
- a safe place to walk or bicycle
- interaction among neighbors
- a general feeling of security and safety
- the opportunity for residents to enjoy their homes and property

Traffic calming is a term that has, in recent years, become synonymous with providing the means to slow vehicles, reduce cut-through traffic volumes and help achieve a livable community. Through the use of a variety of measures, physical or otherwise, traffic calming helps reduce the undesirable effects of the presence of motor vehicles in residential neighborhoods. The Institute of Transportation Engineers, an international organization of transportation professionals, has defined traffic calming as:

"The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users."

In response to the concerns of Imperial Beach residents, the City Council has established the Imperial Beach Neighborhood Traffic Management Program, referred to as the Traffic Management Program, based on similar programs in other cities, with an eye toward using traffic calming measures to address neighborhood concerns about traffic. The Imperial Beach Neighborhood Traffic Management Program is designed to have significant neighborhood involvement. City staff plans to work closely with residents to identify problems and their solutions and to gather the support necessary to ensure the success of any traffic calming plan that may merit adoption. Communication with the residents at each step is critical and the

urgency of plan development will not be allowed to override the need for thorough understanding, commitment and approval by the neighborhood.

Since neighborhood involvement is the key, the program is designed to solicit and encourage residents' active participation in identifying concerns, developing reasonable solutions and supporting the final outcome. In the traffic engineering field, the manner in which this occurs is a process that contains the elements of the "4 E's" – Education, Engineering, Enforcement, and Enhancement. Each element of the "4 E's" is traditionally incorporated into solutions to traffic problems.

By utilizing the "4E" process, which incorporates a comprehensive, integrated involvement of concerned residents, the challenge of identifying and resolving problems can successfully take place.

The basic elements of the 4E process include:

- Education: Providing resource materials and information to residents to inform them about all aspects of traffic calming.
- Engineering: Physical measures and other techniques utilized in the traffic calming program that are based upon input and concurrence by residents, engineering principles, and financial and environmental considerations.
- Enforcement: Sheriff presence and selective enforcement of vehicle code violations.
- Enhancement: Using special treatments in the physical measures through design and/or landscaping features to improve livability, aesthetics, and community pride.

It is the policy of the State of California that all persons have an equal right to use public streets and that no agency may restrict the use of streets to only certain individuals. With certain exceptions provided for in the California Vehicle Code, the specific authority to regulate travel upon streets can only occur in specific instances related to:

- Implementation of the Circulation Element of the General Plan
- Criminal activity
- Regulating or prohibiting processions or assemblages
- Streets dividing school grounds to protect students attending such schools or school grounds

Requests to implement the Traffic Management Program will ultimately be considered through a process outlined in this program. Careful consideration will be given to each request to ensure that it meets State law and the criteria contained in the program.

GOALS

The City Council has established the Imperial Beach Neighborhood Traffic Management Program to help improve the quality of life for Imperial Beach residents by reducing excessive traffic and/or higher than normal vehicle speeds in their neighborhoods. With a defined traffic calming process and established procedures contained in this document, Imperial Beach residents will have the measures and techniques ("tools") at their disposal to avert many negative impacts associated with vehicular traffic on residential streets.

The goals of a traffic calming program include:

- Improving the quality of life in neighborhoods
- Creating safe streets by reducing the collision frequency and severity
- Reducing negative effects of motorized vehicles

To further enhance the goal of calming a street by neutralizing the negative situation causing the problem, some basic principles apply:

- Safety is the primary issue. Protection of vulnerable street users must occur through traffic calming
- Community-based planning of traffic calming must take place
- A degree of self-enforcement of regulations is needed through design
- Driver behavior must be affected by traffic calming

PROGRAM STRATEGIES

The City of Imperial Beach strives to achieve neighborhood livability through implementation of current standards and policies. Managing traffic is a key component in this endeavor and one that is vital in promoting characteristics of livable neighborhoods. Therefore, strategies are needed to identify and address issues revolving around speeding, excessive volumes and safety concerns on residential streets when it occurs. These strategies include:

- Developing recommendations that adhere to State law
- Satisfactorily addressing legal and liability issues
- Preserving reasonable emergency vehicle access and response time consistent with response standards
- Maintaining reasonable vehicular access
- Promoting neighborhood safety for pedestrians, bicyclists, motorists and residents
- Encouraging and incorporating citizen participation in identifying traffic calming measures and techniques
- Through prioritization of traffic calming requests, utilizing City resources efficiently
- Utilizing a combination of education, engineering, enforcement and enhancement (4E's)
- Maintaining, encouraging and enhancing pedestrian, bicycle, transit and alternative modes of travel
- Balancing on-street needs (such as parking) with the reasonable and safe function of the street
- Considering achievable options for funding

PROCEDURES

The procedures to implement traffic calming measures and techniques are described on the following pages and are referred to as phases. In general, the established procedures are consistent with the methodology currently used in Imperial Beach to address any traffic-related concerns. The procedures require, and are designed to encourage, substantial neighborhood participation, following the process used by staff to formulate solutions to problem locations and the methods for proposing those solutions to the City Council for final resolution.

The Imperial Beach Neighborhood Traffic Management Program has been crafted as a three-phase program, consisting of the following structured approach:

- Phase I (Data, Ranking, Signage & Striping)
- Phase II (Study & Stakeholders)
- Phase III (Solutions, Selection & Implementation)

The program is designed in such a way that residents of each street with identified problems, and with neighborhood support and commitment, can play a part in the program. Yearly funding is established by the City Council and a priority ranking of streets eligible for mitigation measures channels efforts and resources to those streets where traffic calming is most needed and will have the greatest beneficial effect.

PHASE I TRAFFIC REQUEST PROCEDURES

STEP 1

SUBMIT WRITTEN REQUEST

STEP 2

**STAFF PREFORMS FIELD REVIEW,
OBTAINS DATA, AND PREPARES
STUDY**

STEP 3

**STAFF PREPARES PRIORITY SCORING
WORKSHEET AND RANKS THE
REQUEST**

STEP 4

**STAFF PREPARES PHASE I
RECCOMENDATIONS**

STEP 5

ISSUE WORK ORDER

STEP 6

COMMUNICATE WITH RESIDENT

STEP 7

MONITOR RESULTS

PHASE I (DATA, RANKING, SIGNAGE & STRIPING)

When a resident has a traffic-related concern that they believe should be addressed by the Traffic Management Program, the process will be initiated in the following manner.

Step 1 Written Request

A written request is sent to the Department of Public Works by a resident requesting that staff investigates and resolves the traffic concern identified in the petition. An investigation request submitted by a sole individual will be addressed on a first-come first-serve basis subject to the Public Works Department staffing, equipment, and workload realities. An individual request co-signed by multiple residents (up to 5 co-signers) will be given higher priority within the workload queue. The request must include name, address, phone, and e-mail address of all petitioners.

Step 2 Investigation/Studies

Staff gathers preliminary data about the expressed concern and/or review the existing available data. Field reviews and appropriate traffic studies may be conducted. They may include:

- Geometric conditions of the road
- Volume counts
- Parking availability/restrictions
- Pedestrian counts
- Location of existing traffic control devices
- Collision analysis
- Speed surveys
- Other studies as determined appropriate

Traffic education, enforcement, and operational improvement strategies that are less restrictive engineering solutions will be formulated after the data is collected. The Department of Public Works will conduct continual data gathering even on those roadway segments where no written request has been submitted subject to staffing, equipment, and workload realities.

Step 3 Ranking the request using the Priority Scoring Worksheet

Referencing the collected traffic and site data, the request is ranked using the Priority Scoring Worksheet. The ranked streets are placed in order of priority on the Phase I traffic calming list. Each year the new requests will be incorporated into the list based on their priority scoring. Criteria and points assigned are as follows:

1. Travel Speed (maximum 40 points):
10 points for each mile per hour the 85th percentile speed is over the base speed. The base speed is defined as the prima facie speed limit.
2. Traffic Volumes (maximum 30 points):
One point is assigned to each 100 vehicles per day or to each 10 vehicles per peak hour. It is calculated by dividing the typical weekday average daily traffic by 100 and rounding it to the nearest whole number, or dividing the weekday peak hour volume by 10 and rounding it to the nearest whole number.

3. Collision History (maximum 10 points):
One point each will be assigned to a correctable collision on a street, including those occurring at intersections, within the past five years. A correctable collision is one that might have been prevented by the installation of a traffic control device or traffic calming measure.
4. Sidewalks (maximum 5 points):
5 points if no sidewalk or pedestrian pathway exists along at least one side of the street.
0 points if a sidewalk or pedestrian pathway is located on at least one side of the street.
5. School Proximity (5 points maximum):
5 points if school grounds abut the candidate street.
3 points if the project area of influence is within 500 feet of school grounds.
1 point if the project area of influence is located within 1,000 feet of school grounds.
6. Pedestrian Crossings (10 points maximum):
5 points if a school crosswalk (yellow crosswalk) is located on a street in the project area of influence.
10 points if a major crosswalk is located on a street in the project area of influence. A major crosswalk is defined as having 10 or more pedestrians crossing per hour during any eight hours of a typical weekday.

A maximum total of 100 points may be given for the street under consideration, using the Traffic Management Program Priority Scoring Worksheet. See Appendix A for the worksheet.

Step 4 Prepare Phase I Recommendations

The highest ranked streets will proceed to Step 4 of Phase I. The data collected and the existing street conditions will be utilized to determine preliminary engineering recommendations prior to selection of traffic calming measures from the traffic calming tool box. Typical recommendations will include additional signage and striping. Additional traffic enforcement will also be requested from the Sheriff Department.

Step 5 Issue Work Order

Work orders will be generated as approved to implement the recommendations.

Step 6 Communication with Resident

The resident and any interested neighbors will be informed of the outcome and the Phase I recommendations. They will also be told that the results will be monitored and if determined to be unsuccessful the street will proceed into Phase II.

Step 7 Monitor Results

Six to twelve months after the Phase I measures have been installed new data will be collected. The new data will be compared to the old data and if it is determined by the Public Works Director that the Phase I measures have not adequately addressed the problem the street will enter into Phase II of the program.

PHASE II TRAFFIC REQUEST PROCEDURES

(Request can only proceed to Phase II after Phase I has been implemented and found to not adequately address the traffic problem.)

STEP 1

SUBMIT PHASE II REQUEST

STEP 2

DETERMINE ELEGIBILITY

STEP 3

**DETERMINE PROJECT AREA OF
INFLUENCE**

STEP 4

PETITION PROCESS

STEP 5

RANKING PROCESS

STEP 6

CITY COUNCIL APPROVAL

STEP 7

**ANNUAL PRIORITY LIST OF
PROJECTS**

PHASE II (STUDY & STAKEHOLDERS)

If Phase I options do not adequately address the problem after being in place for an appropriate amount of time as determined by the Public Works Director, Phase II of the Traffic Management Program may be considered upon review and recommendation by the Public Works Director consistent with current workloads.

Step 1 Written Request and Petition

Phase II will be initiated when a petition is sent to the Public Works Department by a representative of the neighborhood requesting the resolution of the traffic concern. The petition must include name, address, phone, and e-mail address of the representative and the signatures of at least 10 residents or 10% of the affected households, whichever is greater. The letter will be generated by the residents following discussions with the Public Works Director, study of Sheriff Department results of Phase I, and anticipation of what might be accomplished through further utilization of the Traffic Management Program process.

Step 2 Eligibility Determination

To participate in Phase II and ultimately Phase III of the Traffic Management Program, residents must reside on the street or streets where the concerns exist. These streets must meet the minimum qualifying criteria to be candidates for a future traffic calming project. Not all residential streets and/or residential areas will qualify to participate in the Imperial Beach Neighborhood Traffic Management Program. Eligibility criteria for a street are as follows:

1. Completion of Phase I of the Traffic Management Program; and
2. Posted speed limit on candidate street(s) of 30 miles per hour or less; and
3. The 85th percentile speed (critical speed) is greater than 10% over the posted speed limit; or
4. The street is subject to cut-through traffic. Cut-through traffic on the candidate street is determined to be either greater than 30% of the daily weekday total street volume or greater than 30% of the total weekday peak hour traffic volume; and
5. The Fire Department determines that the candidate street is not a primary emergency response route and sends a memorandum to the Public Works Director to confirm this finding; and
6. The candidate street is not a designated bus route; and
7. The street has no more than two lanes; and
8. Residences are located on at least one side of the street or there is a school or public facility on the street; and
9. The curb-to-curb width on the candidate street is 40 feet or less.

Each of the nine eligibility criteria must be met for a street to be considered for further processing through the Traffic Management Program. However, on a case-by-case basis the Public Works Director may determine exceptions.

Streets not meeting the eligibility criteria but considered candidates for exception for traffic calming measures will be scheduled for review and possible approval by the Public Works Director. If the Public Works Director's review leads to the conclusion that the street merits an exception, it will be processed through the Traffic Management Program as if it met all qualifying criteria.

Step 3 Determine Project Area of Influence

The street or streets impacted by neighborhood concerns or potential solutions, including all dwelling units or other land uses bordering the subject street or streets, comprise the project area of influence. The Public Works Director will determine the project area of influence with input from neighborhood representatives. Residents of dwelling units or property owners of vacant land within the boundaries of the project area of influence are considered to be stakeholders.

Step 4 Neighborhood Support Petition

A Phase II petition must be signed by the stakeholders in order for the request to be advanced. Documentation of support for consideration of a project is indicated by 10 residents or 10% of those eligible individuals located within the project area of influence (whichever is greater) that sign the petition. Only City-provided petition forms will be accepted.

All residents of dwelling units and/or business owners and property owners of vacant land within the project area of influence are eligible to sign the support petition. However, only one signature per vacant property, business or dwelling unit will be counted and permitted in the petition process since those individuals influence, and are impacted by, street operations. All non-resident owners will be notified of all public meetings so that they have the opportunity to express their views.

Step 5 Project Priority Ranking Criteria and Scoring Process

The Phase I score will be re-used to rank the Phase II candidate streets. All streets that have been evaluated and assigned scores shall be included on the priority list. Streets with the most points will be considered the highest ranked projects eligible for future funding by the City of Imperial Beach.

Step 6 City Council Approval

On a twice per year basis, the City Council will review the list of all candidate streets with priority rankings based upon the priority scoring worksheet detailed in Step 6 above. The review will take place at a noticed public meeting. Further, each individual or group that initiated a project for evaluation will be notified of the meeting in writing. Upon review of the Public Works Director's recommendation, and after considering all public input, the City Council will approve a priority listing of candidate streets and this list will establish priorities for City funding in order of the projects' ranking. Funding availability will depend upon resources available in the operating budget.

Step 7 Ranked Projects Remain Eligible for Three Years

Twice per year, new projects in the approval pipeline will be assigned points and placed on a priority list in accordance with the established process. Traffic calming projects will remain on the priority list for three years, during which time they will be eligible for funding consideration.

During this period of eligibility, projects could move up or down in the ranking as new projects are added to the priority list in the order their point totals warrant.

Prior to a project's final year on the priority list, its point total will be updated according to the latest information available and it will assume a place on the priority list according to that reworked total. At the end of the third year, any project still not qualifying for funding will be removed from the list if an extension in time is not requested.

A one-time, two year extension of time for a project to remain on the priority list may be requested by the project area of influence representative. This written request should be sent to the Public Works Director and must be accompanied by a City-prepared petition signed by individuals in the project area of influence. The petition, signed by 10 residents or 10% of those eligible individuals located within the project area of influence (whichever is greater), must indicate support of having the project remain on the priority list an additional two years (for a total of five years, maximum). Without that support, the project will be removed from the priority list after three years.

A project that has not received funding after five years will be removed from the priority list. One year after a project fails to receive funding and is removed from the priority list, the community representative for that project may request that it be considered for restoration to the list. Such requests must be made at the time the next cycle of projects is submitted for the annual review by the City Council. A petition, as described above, should be resubmitted.

The street eligibility priority life cycle will follow the following timeline:

Priority list Evaluation and Approval by the City Council.

Begin Year 1 (July 1st – June 30th) – Street placed on priority list by City Council. Year 1 begins upon City Council approval.

November & May – Priority list evaluated by Public Works Director. Points total updated twice per year and a new priority ranking established.

December & June – Priority list Approval by the City Council.

End Fiscal Year (June 30th) – street remains on priority list.

November & May – Same as prior year.

December & June – Same as prior year.

End Fiscal Year 2 (June 30th) – Street remains on priority list, points total updated prior to the end of Year 2, and a new priority ranking established.

November & May – Same as prior year.

December & June – Same as prior year.

End Fiscal Year 3 (June 30th) – Street did not receive funding, dropped from the priority list, unless a one-time two-year extension is requested.

November & May – Priority list evaluated by Public Works Director. Points total updated twice per year and a new priority ranking established.

December & June – Priority list Approval by the City Council.

End Fiscal Year 4 (June 30th) – Street not on list, reviewed by the Public Works Director. If the City Council approves, the street is restored to the priority list (Year 1 begins upon City Council approval).

PHASE III TRAFFIC REQUEST PROCEDURES
(After completion of Phase II)

| | |
|----------------|---|
| STEP 1 | NEIGHBORHOOD MEETING |
| STEP 2 | DEVELOP CONCEPTUAL PLAN |
| STEP 3 | SURVEY NEIGHBORHOOD SUPPORT FOR CONCEPTUAL PLAN |
| STEP 4 | ENVIRONMENTAL REVIEW |
| STEP 5 | COMPLETE FINAL DESIGN |
| STEP 6 | INSTALL TEMPORARY MEASURES (IF NECESSARY) |
| STEP 7 | NOTIFY NEIGHBORHOOD OF RESULTS OF TEMPORARY MEASURES |
| STEP 8 | SURVEY NEIGHBORHOOD SUPPORT FOR FINAL DESIGN |
| STEP 9 | CITY COUNCIL APPROVAL |
| STEP 10 | CONSTRUCTION |
| STEP 11 | MONITOR RESULTS |

PHASE III (IMPLEMENTATION)

Upon completion of Phase II, each qualified project will have a priority ranking. Prior to the new fiscal year beginning July 1 of each year, a traffic calming funding level will be established and approved by the City Council during the annual capital improvement budget process. Some of the highest ranked projects then will be eligible for funding and construction in accordance with the following process.

Step 1 Meeting with the Neighborhood

All individuals from the project area of influence will be invited to individual neighborhood meetings. At the meeting, Public Works Department staff will explain to those in attendance the Phase III process that may lead to installation of the traffic calming measures proposed for their neighborhoods. Discussion will include:

- Neighborhood concerns
- Traffic data gathered
- Results from Phase I
- Potential solutions
- Funding availability
- Petition process
- Installation of temporary measures
- Traffic calming plan development process
- Before and after traffic study process

A Fire Department representative will attend the meeting to explain response needs of the emergency service providers and any concerns the Fire Department has with potential traffic calming on the candidate street. Also, a Sheriff Department representative will attend the meeting to respond to questions about enforcement issues.

Staff will ask that a neighborhood group be formed from volunteers residing within the project area of influence. Staff and the residents attending the meeting will determine the committee membership.

Acting as the liaison with their neighborhood, this neighborhood committee will be comprised of up to five residents. Committee members will meet with Public Works Department staff and appropriate representatives from other City departments to develop the conceptual traffic calming plan. The committee will be expected to present the plan to the neighborhood.

Step 2 Develop the Conceptual Neighborhood Traffic Calming Plan

By meeting and working closely with the neighborhood group, staff will be able to assist the committee in:

- Assessing their needs
- Identifying alternatives
- Developing initial plans or solutions
- Finalizing the comprehensive plan based upon
 - Sound engineering principles

- Neighborhood input
- State-of-the-art traffic calming practices
- Funding availability
- Maintenance cost

Throughout design development of the conceptual plan, all residents within the project area of influence will be provided updates and will be encouraged to offer input. The neighborhood group will be actively involved in all aspects of developing the comprehensive neighborhood traffic calming plan and will be expected to commit the time and effort needed to develop a successful plan.

The length of time needed to develop the conceptual plan is dependent upon the complexity of the issues, the level of neighborhood support, project cost and the willingness of the neighborhood group to aggressively pursue plan development. The series of meetings leading to completion of a final conceptual plan for presentation to the neighborhood could take six months or longer.

Step 3 Mail Support Survey for Final Conceptual Plan

A mail support survey will be conducted by City staff upon completion of the conceptual plan developed by the neighborhood group and evidence of a generally favorable consensus on the plan by interested residents. The purpose of the survey will be to determine if the neighborhood project area of influence is in favor of the proposed plan by simple majority (50% plus one vote).

Individuals within the project area of influence will be included in the survey, essentially following the eligibility procedures addressed in Phase II, Step 5. If necessary, and as determined by the Public Works Director based upon the proposed conceptual traffic calming plan, additional properties may be included by expanding the boundaries of the project area of influence. The expanded project area of influence will become the new project area of influence for purposes of the survey and other communications with residents affected by the proposed traffic calming project.

Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 40% of those contacted fill out and return the survey. Staff will then analyze the returns to determine if a simple majority or more of the project area of influence community responding supports proceeding to the final plans, specifications and estimates (Preliminary Survey & Engineering) stage and for the installation of temporary features. Staff will notify by mail all individuals within the project area of influence of the survey results and the next steps in the process.

If 40% of the surveys are not returned, an outreach program must be developed by the neighborhood group with the assistance of staff. Re-survey will occur after all steps established in the outreach program are completed.

A re-survey will be valid if 40% or more of the surveys are returned to staff. If the plan is not approved by a simple majority or more of the returned surveys, the neighborhood group may develop an alternative plan or abandon their efforts. A revised conceptual plan, after an appropriate outreach program, will be tested by the support survey process in this step. If a conceptual plan fails to garner support of the residents in the project area of influence after the second survey, no further surveys will be conducted by City staff for a minimum of one year.

Step 4 Environmental Review

Upon confirming the neighborhood support for the proposed conceptual plan, staff will initiate environmental review of the proposed project through the City of Imperial Beach Community Development Department. Generally, traffic calming improvements proposed within the existing street right-of-way are found to be exempt from detailed environmental review.

Step 5 Complete Final Design

Final design of the traffic calming plan can be started by staff concurrent with processing the environmental document. However, the final plan cannot be completed beyond the 30% stage until environmental certification is received. Depending upon the complexity of the final plan, a consultant may be hired by the City. After completion of the final design, staff may initiate installation of temporary measures to simulate the effect of the proposed permanent traffic calming measures. The Sheriff and Fire Departments will have considerable input during the final design.

Step 6 Install Temporary Measures (if necessary)

Temporary measures may be installed to further assess community support for traffic calming and to determine the impact upon traffic. The initial installation of measures will be low cost and is not intended to necessarily be visually pleasing or improve neighborhood aesthetics. However, the temporary measures will simulate the conditions of the proposed permanent measures and will enable staff to collect traffic data after their installation for comparison with data collected prior to installation.

Temporary measures, if used, must remain in place for a sufficient time period to enable a valid assessment of their influence or impact upon traffic. A test within six months will be conducted by staff.

If it is determined that diversion of traffic to other residential streets occurs because of the temporary traffic calming measures, those properties will be included in the final approval survey. A threshold of 30% or more diverted trips to other residential streets will initiate inclusion of the properties into the "expanded" project area of influence.

Under some scenarios, it may not be appropriate or feasible to install temporary traffic calming measures. When this situation arises, the Phase III process will proceed to Step 8 in-lieu of Steps 6 and 7.

Step 7 Communicate Results of Temporary Measures (if necessary)

Upon completion of the test installation period, final results will be presented to individuals in the project area of influence. A meeting may be held with the neighborhood to share the results or results may be mailed, including any concerns expressed by the Sheriff and/or Fire Department. Before and after traffic data and staff recommendations will be communicated to the residents.

Step 8 Mail Final Approval Survey

Staff will conduct by mail the final approval survey of the proposed traffic calming plan simulated by the temporary measures. The survey area will include the project area of influence plus other properties determined to be impacted by diverted trips, as specified in Step 6. Approval will be the go-ahead for final, permanent installation of the proposed traffic calming measures. In the final approval survey, each dwelling unit, business or vacant property owner will be entitled to one vote. Non-resident owners of residential housing will not be eligible to vote, but will be notified of the appropriate meetings at the City Council. Significant support for the installation of the proposed traffic calming measures must be indicated by those being surveyed. Consequently, at least a simple majority of the eligible surveys returned must indicate acceptance for permanent installation of traffic calming measures before Step 9 is initiated.

Step 9 Final Approval by the City Council

All individuals within the project area of influence, or expanded project area of influence, will be informed of a duly noticed public meeting to be held by the City Council to hear the recommendations for the final traffic calming project and to hear public testimony on the matter. If Council decides the project is acceptable, it will so indicate by adopting an appropriate resolution, thus taking the first step toward installation of the project. If the Council does not support the proposal, staff may be directed to abandon the plan, or to return to the neighborhood for refinement of the plan, or to take no further action.

Step 10 Project Installation (Construction)

Construction of the approved project, in most cases, will be performed by a licensed contractor selected through the City's construction bidding process. After a contractor is selected by the City, individuals within the project area of influence will be notified of the construction schedule.

Step 11 Project Monitoring

Traffic calming projects that have been constructed will be monitored for effectiveness during the first year following completion of the installation. An annual report will be provided to the City Council at the end of each of the first two years of the completed traffic calming project. In the report, staff will provide traffic data results, accident history, observed deficiencies and/or impacts of the traffic calming measures, comments, suggestions or complaints received, and staff recommendations.

Individuals within the project area of influence will be notified of the availability of the annual reports for their review. If it should happen that some residents of the neighborhood believe that the traffic calming measures, impacts and results do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process which is outlined in Appendix B.

FUNDING

Imperial Beach recognizes the different fiscal needs, priorities and abilities of residents concerned with improving neighborhood livability on public streets. In general, improvements or alterations to an existing street fully widened and improved to City standards is the responsibility of the City of Imperial Beach. As such, it is intended that all costs directly associated with the planning, design and implementation of the Traffic Management Program will be borne by the City.

Funds available for use in a traffic calming project will be determined through the City's annual budget process. Many different fiscal factors must be considered to establish if and to what level funds will be allocated for projects on the priority list. Staff will recommend a funding level and the City Council will consider and adopt the annual budget before fiscal year end on June 30.

PRIVATE FINANCING

As an alternative to the City of Imperial Beach paying for installation of the approved neighborhood traffic calming plan, residents may collect funds themselves in any manner they chose equitable to pay for the project cost. Private funds must be deposited with the City prior to competitive bids being solicited to construct the project. Privately funded projects may move ahead of other projects on the approved priority list.

TRAFFIC MANAGEMENT PROGRAM UPDATE PROCESS/PROCEDURE TO ADD OR DELETE NEW MEASURES OR METHODOLOGY

It is intended that the Imperial Beach Neighborhood Traffic Management Program be dynamic and subject to change. Traffic calming measures, techniques and/or methodologies continue to evolve. What was once in favor and popular to implement may have been subsequently found by agencies to be undesirable, unworkable, or unacceptable to the neighborhood.

Revisions to the Traffic Management Program are expected. When revisions are suggested, a formal review and approval process of the revision(s) will be followed.

Steps in the revision/update process are as follows:

Step 1 Initiation of Revision

A change or revision may be initiated by the City Council, staff or a citizen. It is suggested that the requested revision be made in writing, with the reasons for or intent of the revision clearly stated. A compelling reason to initiate the update process or to change the process must be offered to be favorably received.

Step 2 Review by Staff

Suggested revisions will be thoroughly researched and reviewed by Public Works Department staff to determine if they are appropriate for inclusion in the Traffic Management Program. City staff will be consulted and, as necessary, comments from stakeholders will be solicited. Changes to traffic calming measures, procedures or methodologies will only be considered by the City Council once a year, unless such measures, procedures or methodologies are determined to be illegal.

Step 3 Response to Initiator

Staff will respond in writing to the individual proposing the revisions, commenting on their suitability or requesting additional information as needed. Revisions deemed unacceptable by staff will not be processed further. Revisions recommended by staff for further consideration will be scheduled for discussion at a City Council meeting. Only those suggested revisions that significantly enhance the overall Traffic Management Program will be considered for acceptance and submitted to the City Council.

Step 4 Review and Approval by the City Council

All revisions proposed during any 12-month period will be reviewed by the City Council at the end of such period. In a public meeting, the City Council will consider the proposed revisions. Staff may be directed by the Council either to implement the revisions to the program and the supporting documents or to take no action on the requested revision.

Proposed revisions will not interfere with or delay the processing of a neighborhood traffic calming program in progress. A neighborhood that has started development of its traffic calming program will continue the process without change.

ALTERNATIVE TRAFFIC CALMING MEASURES **NOT RECOMMENDED FOR USE**

Several traffic calming measures that have been applied elsewhere may not be appropriate for use in Imperial Beach. Listed following are measures not recommended for installation on public streets and, therefore, not proposed for consideration as part of a neighborhood traffic calming project.

STOP Signs

As a traffic calming measure, STOP signs are not appropriate. Reductions to vehicle speed only occur within about 150' - 200' of the STOP sign and there is a relatively insignificant impact on mid-block speed reduction. Increased noise and air pollution emissions occur at the STOP sign location due to vehicle braking and acceleration patterns. Frustration of residents can increase when vehicles are observed to ignore or slowly roll through the STOP sign without completely stopping.

STOP signs are intended to assign the right-of-way to vehicles and pedestrians and should only be used when meeting City of Imperial Beach Guidelines for Traffic Control Device Installation.

Miscellaneous Non-Standard Devices

Signs and/or striping not recognized by the Manual on Uniform Traffic Control Devices (MUTCD) and supplemented by the State of California Department of Transportation (Caltrans) as an official traffic control device shall not be used in the public right-of-way. These signs typically include CHILDREN AT PLAY, SLOW and others. Non-official signs are of the novelty type, many have messages that are misinterpreted by drivers, have no legal meaning, and their use can expose the City to tort liability. These types of signs do not command the attention or respect of drivers that are repeat users of the street. Using signs that are not officially approved may give a false sense of security to residents. Additionally, the signs raise expectations that some degree of protection is provided through their use when, in reality, this is not the case.

Cul-de-Sacs and Road Closures

Streets have been designed and constructed to facilitate multiple points of egress for the residents and multiple ways for an emergency vehicle to respond to an incident. Basic circulation patterns are intended to remain. Streets will not be truncated through the construction of a barrier to cause a road closure or by converting the end of the street into a cul-de-sac through construction of a turnaround.

APPENDIX

A

Traffic Management Program Priority Scoring Worksheet

This worksheet will be completed by City of Imperial Beach staff. It will be used to assign points to a street for prioritization of a potential specific neighborhood traffic calming project.

Name of neighborhood (street location): _____

| | Points |
|--|--------|
| 1. Travel Speed (40 pts. Max.) For each mile per hour the 85 th percentile speed is over the base Speed, 10 points will be assigned. Base speed is defined as the prima facie speed limit: 85 th Percentile Speed: _____ Date Measured: _____ Prima Facia Speed: _____ Base Speed: _____ | _____ |
| 2. Traffic Volumes (30pts. Max.) Total weekday peak hour volume divided by 10, rounded to nearest whole number or weekday peak hour volume divided by 10, rounded to nearest whole number (use higher number) Volume: _____ (vpd or vph) Date Counted: _____ | _____ |
| 3. Collision History (10 pts. Max.) One point for each correctable collision during the past 5 years Number of collisions: _____ Period: _____ | _____ |
| 4. Sidewalks (5 pts. max.) No sidewalk or pedestrian pathway exists along at least one side of the street = 5 points A sidewalk or pedestrian pathway exists on at least one side of the Street = 0 points | _____ |
| 5. School Proximity (5 pts. max.) School grounds abut candidate street = 5 points Project Area of Influence (PAOI) is located within 500 feet of school grounds = 3 points PAOI is located within 1,000 feet of school grounds = 1 point | _____ |
| 6. Pedestrian Crossings (10 pts. max.) School crosswalk (yellow crosswalk) is located on a street in the PAOI = 5 points Major crosswalk is located on a street in the PAOI = 10 points | _____ |
| Total Score: | _____ |
| Comments: | |

Evaluator _____ Date _____

APPENDIX

B

Traffic Calming Measures Removal Process

Individuals within a neighborhood may determine that one or more traffic calming measures should be removed. If so, a City-provided petition favoring removal and signed by 66% of the eligible individuals within the project area of influence or expanded project area of influence, if applicable, must be sent to staff. Eligibility criteria for signing the petition will be the same as for previously indicated voting procedures (one signature per household or property). A sample petition is provided on the next page for use by the neighborhood contact person to collect signatures.

Staff will review the petition, determine if the 66% threshold is met and notify all residents within the project area of influence of the results. No removal petition will be accepted by staff during the test period when temporary measures are being tested.

If the petition has 66% or more valid signatures, it will be submitted to the City Council for consideration. All residents within the neighborhood project area of influence will be notified by mail of the date when the City Council will consider their request for removal of the traffic calming measure(s). Each interested resident will have the opportunity to address the City Council. A final decision will be made by the City Council based upon staff input and citizen comments. As appropriate, staff will initiate action on the City Council's decision.

APPENDIX

C

PETITION **REQUEST TO REMOVE TRAFFIC CALMING MEASURE(S)** **IMPERIAL BEACH NEIGHBORHOOD TRAFFIC** **MANAGEMENT PROGRAM**

CONTACT PERSON: _____ DATE: _____

CONTACT PERSON ADDRESS: _____

CONTACT PERSON TELEPHONE, FAX, AND E-MAIL: _____

The undersigned states that they are requesting that the City of Imperial Beach consider removing the traffic calming measure(s) installed on _____ (street name).

The measure or measures to be removed are: _____

The undersigned further state they have read the Travel Calming Removal Process section contained in the Imperial Beach Neighborhood Traffic Management Program.

Note: Eligibility criteria for signing the petition is one signature per household or property.

| Name (please print) | Address (please print) | Telephone | Signature |
|---------------------|------------------------|-----------|-----------|
| 1. | | | |
| 2. | | | |
| 3. | | | |
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| 13. | | | |
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| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |

(attach additional sheets as necessary)

APPENDIX

D

TRAFFIC CALMING TOOLBOX

Traffic control devices are those official signs and striping placed in the public right-of-way and recognized by the public such as STOP signs, curve warning signs, centerline striping, etc. These devices have been officially approved by the Manual on Uniform Traffic Control Devices (MUTCD) as supplemented by the State of California Department of Transportation pursuant to legislative authority provided for in the California Vehicle Code.

Traffic calming measures, however, have evolved to include features that are not officially approved through legislative action by the State of California. Commonly referred to as "tools", traffic calming measures or features (e.g., tools) are available in the traffic calming "toolbox". Each tool in the toolbox of options is unique and has a specific purpose for addressing residential street traffic concerns requiring some form of traffic calming. Tools have their limitations on effectiveness, advantages and disadvantages and a range of costs. More than just a structural feature on the street, traffic calming tools include the components of education, enforcement, engineering, and enhancement.

The following pages identify tools that are endorsed and available in the traffic calming toolbox. They were chosen for:

- appropriateness to address traffic concerns in Imperial Beach
- acceptability to stakeholders, including the Fire Department
- suitability for use in neighborhoods

Each traffic calming measure is briefly described, application for use is listed and the advantages and disadvantages of the tool is provided. Estimated costs have been provided where the cost of the measure was able to be determined.

Traffic Calming Toolbox Table of Contents

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EDUCATION

Phase 1

Description:

Conversations, meetings, e-mails, letters and handouts to residents regarding neighborhood traffic and pedestrian safety issues.

Application:

Traffic education is intended to make residents aware of local residential speed limits and other neighborhood traffic and safety concerns.



Advantages:

Allows residents to express views and obtain answers.

Identifies issues of concern and solutions.

Disadvantages:

Effectiveness may be limited.

Limited audience.

Potentially time consuming.

Special Considerations:

- Meetings need to stay focused on specific traffic issues.

Estimated Cost:

- Varies (staff time and published materials).

SHERIFF PRESENCE

Phase 1

Description:

Sheriff vehicles drive through or stop for a few minutes on residential streets to observe driver behavior.

Application:

Sheriff presence is used to make a visual showing in residential neighborhoods to help discourage speeding.



Advantages:

Shows an enforcement presence.

May help slow vehicle speeds.

Disadvantages:

Presence without enforcement has limited effectiveness.

Limited Sheriff resources.

Special Considerations:

- Typically only effective when officer is present.
- Used on residential streets with complaints of speeding.

Estimated Cost:

- N/A

RADAR TRAILER

Phase 1

Description:

A portable trailer equipped with a radar unit that detects and displays the speed of passing vehicles on a reader board located next to a speed limit sign.

Application:

Radar trailers help discourage speeding along neighborhood streets by showing drivers their current speed.



Advantages:

Effective educational tool.
Good public relations tool.
Encourages speed compliance.
Can reduce speeds temporarily.

Disadvantages:

Not an enforcement tool.
Ineffective on multi-lane roadways.
Less effective on high volume streets.

Special Considerations:

- Can be placed where a resident indicates a speeding problem is located.
- Typically only effective in reducing speeds when radar trailer is present.
- Some motorists may speed up to try to register a high speed.

Estimated Cost:

- Minimal.

SHERIFF ENFORCEMENT

Phase 1

Description:

The Sheriff Department deploys motorcycle or automobile officers to perform targeted enforcement on residential streets.

Application:

Targeted Sheriff enforcement used to make drivers aware of local speed limits and to reduce speeds by issuing citations.



Advantages:

Effective, visible enforcement.
Driver awareness increased.
Can be used on short notice.
Can reduce speeds temporarily.

Disadvantages:

Temporary measure.
Requires long-term use to be effective.
Limited Sheriff resources.

Special Considerations:

- Typically only used on residential streets with documented speeding problems.
- Typically only effective while officer is actually monitoring speeds.
- Benefits are short-term without regular periodic enforcement.
- Expensive.

Estimated Cost:

- N/A

SPEED LIMIT SIGNS

Phase 1

Description:

25 mile per hour speed limit signs are installed on neighborhood residential streets.

Application:

Speed limit signing encourages slower vehicle speeds along residential streets. Signs are only installed along streets where speeding is a problem.



Advantages:

Clearly indicates prima facie speed limit.

Helps reduce speeds.

Usually popular with residents.

Low cost of installation.

Disadvantages:

Not effective by themselves.

May add to sign clutter.

Increased cost of sign maintenance.

Special Considerations:

- Typically only installed on streets where speeding is a documented problem.
- Requires Sheriff enforcement to be effective.

Estimated Cost:

- \$125 per sign

SPEED LIMIT PAVEMENT LEGENDS

Phase 1

Description:

Painting of speed limit legends on the roadway adjacent to speed limit signs.

Application:

Speed limit pavement legends increase driver awareness of the speed limit to help reduce speeding.



Advantages:

Supplement to speed limit signs.

May help reduce speeds.

Usually popular with residents.

Disadvantages:

Not effective or legal by themselves.

Increase in maintenance cost.

Special Considerations:

- Should only be installed on streets where speeding is a documented problem.

Estimated Cost:

- \$250 per legend

WARNING SIGNS

Phase 1

Description:

Standard warning signs give drivers advanced notice of roadway conditions.

Application:

Warning signs advise motorists to reduce their speed.



Advantages:

Informs motorists of roadway conditions.

Low cost of installation.

Disadvantages:

May add to sign clutter.

Increased cost of sign maintenance.

Not a regulatory sign.

Special Considerations:

- Advisory only, cannot be enforced.

Estimated Cost:

- \$125 per sign

TURN RESTRICTIONS VIA SIGNS

Phase 1

Description:

Standard "No Left Turn", "No Right Turn", or "Do Not Enter" signs used to prevent undesired turning movements onto residential streets.

Application:

Turn restriction signing used to reduce cut-through traffic on residential streets.



Advantages:

Redirects traffic to main streets.
Reduces cut-through traffic.
Low cost.

Disadvantages:

May divert traffic to other streets.
Enforcement required.
Adds to sign clutter.
Violation rates can be high without enforcement.

Special Considerations:

- Installed at entry points of a neighborhood to prevent traffic from entering.
- Has little or no effect on speeds for through vehicles.
- With active enforcement, violation rates can be reduced.

Estimated Cost:

- \$125 per sign

SPECIAL SIGNS

Phase 1

Description:

Special signs involve the use of neighborhood yard signs such as "KEEP KIDS ALIVE, DRIVE 25".

Application:

Special signs may help reduce speeding on residential streets.



Advantages:

- May increase driver awareness.
- May cause drivers to slow down.
- Popular with residents.
- Low cost of installation.
- Proactive approach to a neighborhood concern.

Disadvantages:

- Has no lasting effect.
- Not a permanent feature.
- May create visual pollution.
- Can create a false sense of security.
- Increased cost of sign maintenance.
- Not authorized to be installed in the public right-of-way.

Special Considerations:

- Passively reminds drivers to observe residential speed limits without confrontation.
- Residents are less likely to speed themselves if they are displaying a yard sign.
- Only used 1-2 weeks to increase neighborhood awareness.

Estimated Cost:

- \$20 per sign

HIGH VISIBILITY CROSSWALKS

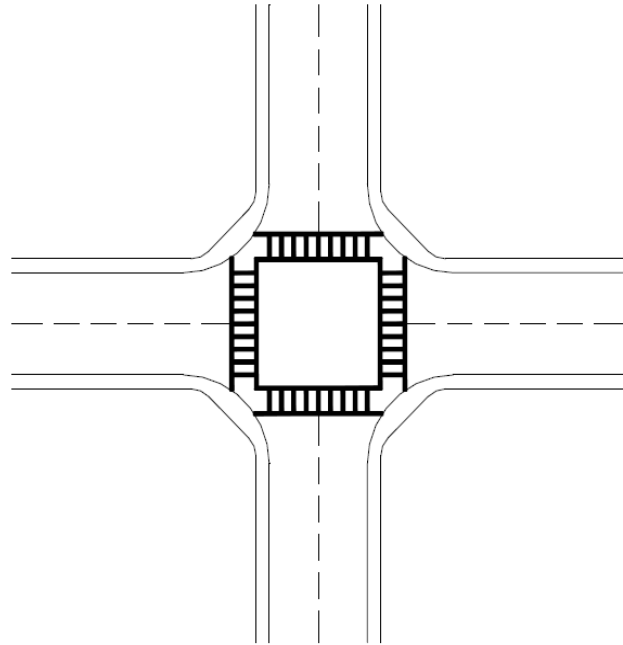
Phase 2/3

Description:

High visibility crosswalks established by painting stripes between the crosswalk's outer boundary stripes.

Application:

High visibility crosswalks increase crosswalk visibility to drivers.



Advantages:

More visible to the driver than traditional crosswalks.

Disadvantages:

Higher maintenance costs.

May give false sense of security to pedestrians.

Increase resurfacing cost.

Special Considerations:

- Pedestrians may place too high a reliance on its ability to control driver behavior.
- Can be used at high pedestrian volume crossing locations.
- Follow City of Imperial Beach Crosswalk Guidelines.

Estimated Cost:

- \$1,000 to \$5,000 each.

NARROWING LANES (STRIPING)

Phase 2/3

Description:

Striping used to narrow traffic lanes. The "extra" pavement width can be used to create or add to bicycle and/or parking lanes.

Application:

Narrowing lanes with striping used to help slow vehicle speeds.



Advantages:

Can be quickly implemented.

May reduce travel speeds.

May improve safety.

Can be easily modified.

Special Considerations:

- Narrowed travel lanes create "friction" to help slow vehicle speeds.
- Can be installed quickly.
- Designated bicycle lanes and/or parking lanes can be created.
- Adds centerline and edgeline striping to neighborhood streets.

Estimated Cost:

- \$0.15 per linear foot.

Disadvantages:

Increases regular maintenance.

Not always accepted as an effective tool.

Some residents may oppose striping on neighborhood streets.

Increases resurfacing costs.

ENTRY TREATMENT

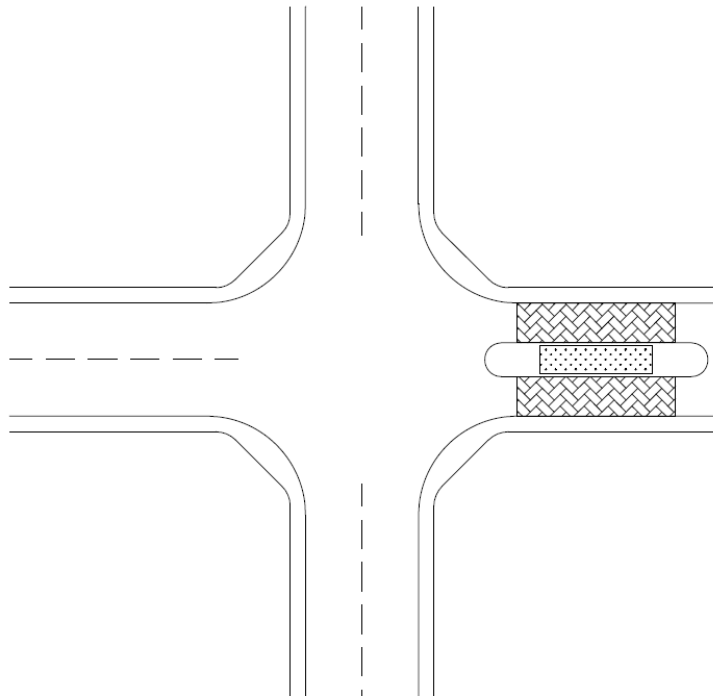
Phase 2/3

Description:

Entry treatments consist of raised landscaped median islands and textured pavement features and are located at entries to neighborhoods.

Application:

Entry treatments help reduce speed. They provide visual cues to drivers they are entering a residential area or that surrounding land uses are changing.



Advantages:

- May reduce vehicle speeds.
- Creates an identify for the neighborhood.
- May reduce cut-through traffic.
- Opportunity for landscaping.

Disadvantages:

- Increase in noise.
- May require removal of parking.
- Can impede truck movements.
- Increase in maintenance.

Special Considerations:

- Entry treatments have minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally affected.
- Entry treatments make drivers more aware of the neighborhood environment.
- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk.

Estimated Cost:

- \$10,000 to \$20,000 each.

TRAFFIC CIRCLE

Phase 2/3

Description:

Traffic circles are raised circular islands installed in an existing intersection. Traffic circles require drivers to slow down to maneuver around the circle.

Application:

Traffic circles provide speed control.



Advantages:

Effectively reduces vehicle speeds.

Reduces collision potential.

Better side-street access.

Opportunity for landscaping.

Disadvantages:

May increase bicycle/automobile conflicts.

Can increase emergency vehicle response time.

Can restrict large vehicle access.

Expensive.

Special Considerations:

- Traffic circles are best used in a series or with other devices.
- About 30 feet of curbside parking must be prohibited in advance of circle.
- Requires the installation of signs and pavement markings.
- Traffic circles are less effective at T-intersections.

Estimated Cost:

- \$15,000 to \$25,000 each.

CENTER ISLAND NARROWING

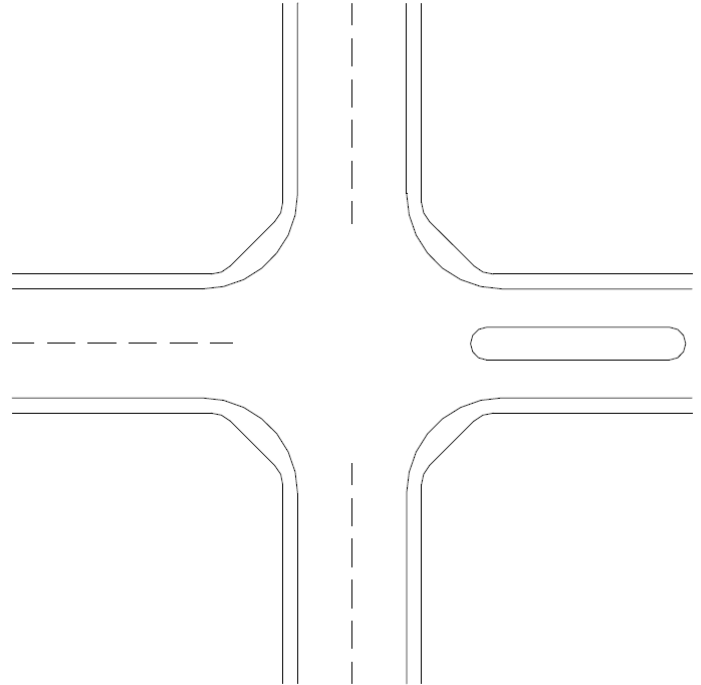
Phase 2/3

Description:

Center island narrowing is the construction of a raised island in the center of a wide street.

Application:

Center islands are installed on wide streets to help lower speeds and/or to prohibit left-turning movements. They also provide a mid-point refuge area for pedestrians.



Advantages:

Reduces vehicle speeds.
Can reduce vehicle conflicts.
Reduces pedestrian crossing width.
Landscaping opportunity.

Disadvantages:

May require parking removal.
May reduce driveway access.
May impact emergency vehicles.
May divert traffic to other streets.

Special Considerations:

- When used to block side street access, may divert traffic.
- May visually enhance the street with landscaping.
- Bicyclists prefer not to have travel way narrowed.

Estimated Cost:

- \$10,000 to \$20,000 each.

MEDIAN BARRIER

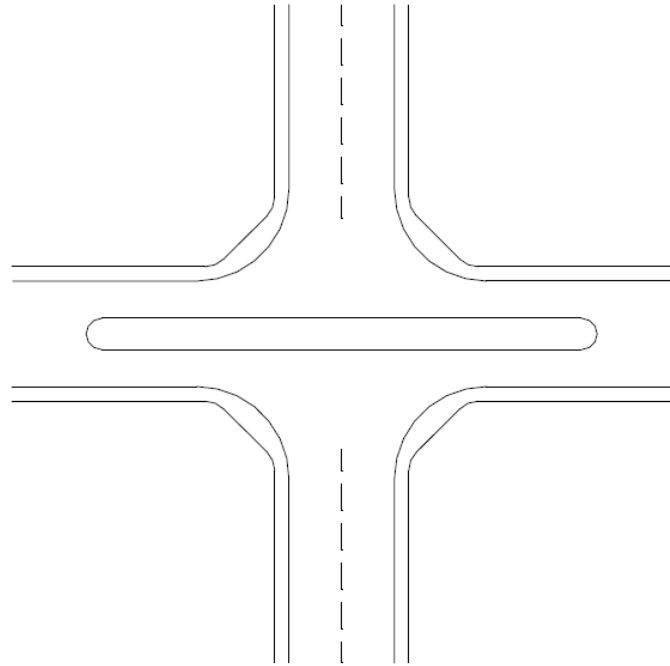
Phase 2/3

Description:

Median barriers are raised islands constructed through intersections that prevent left turns and side street through movements.

Application:

Median barriers reduce cut-through traffic.



Advantages:

Redirects traffic to other streets.

Reduces cut-through traffic.

Provides pedestrian refuge area.

Opportunity for landscaping.

Disadvantages:

Redirects traffic to other streets.

Increases trip lengths.

May impact emergency response.

Creates physical obstruction.

Special Considerations:

- Should not be used on critical emergency response routes.
- Landscaping needs to be carefully designed to not restrict visibility for motorists, bicyclists and pedestrians.

Fire Department Evaluation:

This measure requires extensive evaluation of the specific location and impacts to emergency response times.

Estimated Cost:

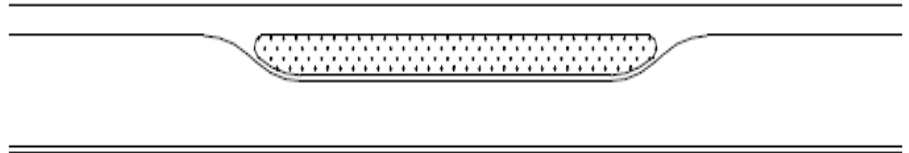
- \$10,000 to \$20,000 each.

MID-BLOCK CHOKER

Phase 2/3

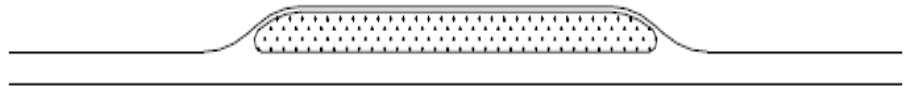
Description:

Mid-block chokers are curb extensions that narrow a street by extending the curbs towards the center of the roadway. The remaining street cross-section consists of two narrow lanes.



Application:

Reduces speeds by narrowing the roadway so two vehicles can pass slowly in opposite directions.



Advantages:

Effectively reduces vehicle speeds.
Shorter pedestrian crossing width.
Improves sight distance.
Opportunity for landscaping.
May impact driveway access.

Disadvantages:

May require parking removal.
May create hazard for bicyclists.
May create drainage issues.
May impede truck movements.

Special Considerations:

- Preferred by many emergency response agencies to other measures.
- Provide excellent opportunities for landscaping.

Estimated Cost:

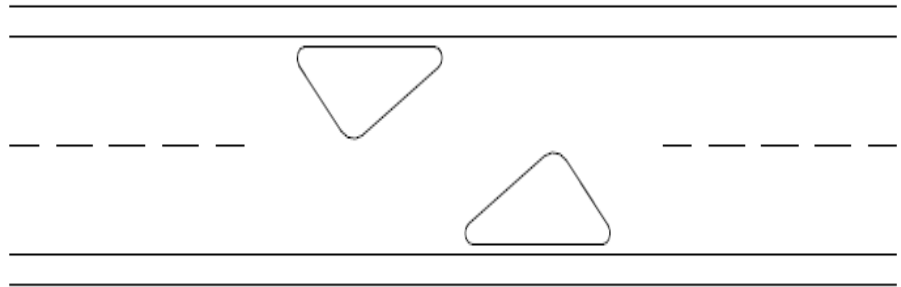
- \$10,000 each.

LATERAL SHIFT

Phase 2/3

Description:

A lateral shift is the construction of curb extensions into the roadway that creates a horizontal deflection drivers must negotiate.



Application:

A lateral shift helps reduce vehicle speeds.

Advantages:

Effectively reduces vehicle speeds.
Low impact on emergency vehicles.
Opportunity for landscaping.

Disadvantages:

Loss of parking.
Increased maintenance.
May impact driveways.
May be expensive.

Special Considerations:

- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.

Estimated Cost:

- \$10,000 to \$20,000 each.

CHICANE

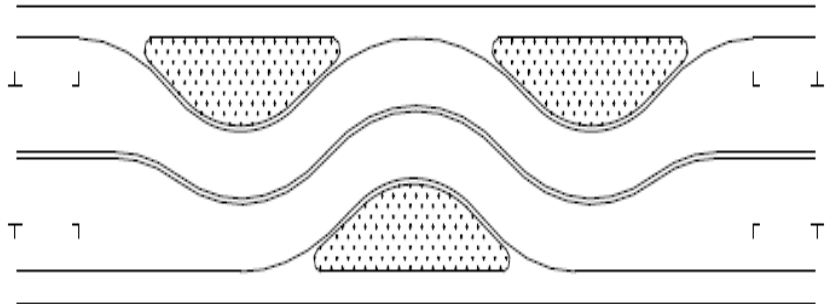
Phase 2/3

Description:

A chicane is a series of two or more staggered curb extensions on alternating sides of a roadway. The horizontal deflection causes motorists to reduce speed.

Application:

Chicanes help reduce vehicle speeds.



Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- May require removal of substantial amounts of on-street parking.
- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.
- Provide landscaping opportunities.
- Most residents would have their driveways affected.

Estimated Cost:

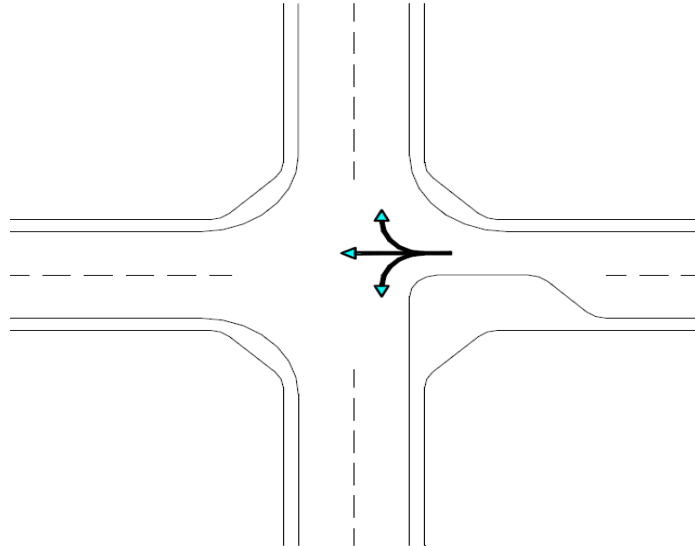
- \$30,000 to \$60,000 each.

SEMI-DIVERTER

Phase 2/3

Description:

Semi-diverters are curb extensions that restrict movements into a street. They are constructed to approximately the center of the street, obstructing one direction of traffic. A one-way segment is created at the intersection, while two-way traffic is maintained for the rest of the block.



Application:

Semi-diverters reduce traffic volume.

Advantages:

Reduces cut-through traffic.
More self-enforcing than signs.
Reduces pedestrian crossing widths.
Opportunity for landscaping.

Disadvantages:

May divert traffic to other streets.
May increase trip lengths.
May require the removal of parking.
Increased maintenance.

Special Considerations:

- Restricts access into street while allowing residents access within block.
- Potential use must consider how residents will gain access.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Fire Department Evaluation:

This measure requires extensive evaluation of the specific location and impacts to emergency response times.

Estimated Cost:

- \$15,000 to \$20,000 each.

PARTIAL DIVERTER

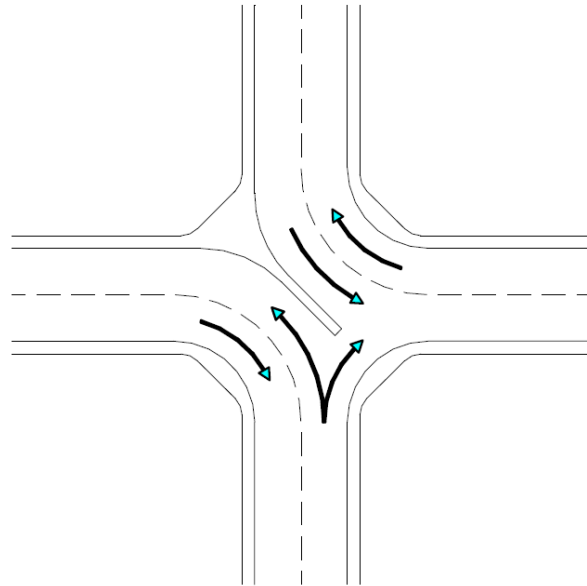
Phase 2/3

Description:

Partial diverters are raised areas placed diagonally across a four-legged intersection (3/4 closure). They prohibit through movements by creating two "L" shaped intersections, with one leg having a right turn.

Application:

Partial diverters help reduce cut-through traffic. They also minimally decrease speeds near the intersection.



Advantages:

Reduces cut-through traffic.

Minimal impact to emergency access.

Reduces collision potential.

Opportunity for landscaping.

Disadvantages:

Redirects traffic to other streets.

May increase trip lengths.

Special Considerations:

- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.
- Can be attractively landscaped.

Fire Department Evaluation:

This measure requires extensive evaluation of the specific location and impacts to emergency response times.

Estimated Cost:

- \$15,000 to \$35,000 each.

FORCED TURN CHANNELIZATION

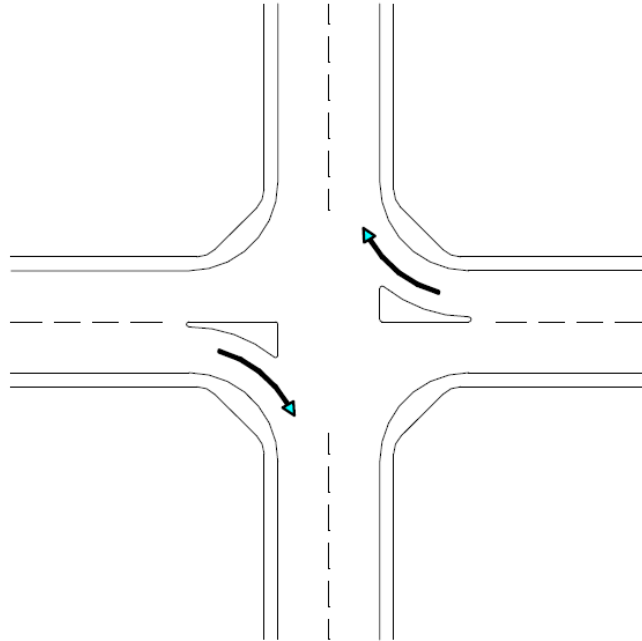
Phase 2/3

Description:

Forced turn channelization are raised median islands that restrict specific movements at an intersection.

Application:

Forced turn channelization reduces traffic volumes/cut-through traffic.



Advantages:

Reduces cut-through traffic.

More self-enforcing than signs.

Shorter pedestrian crossing distances.

Disadvantages:

May divert traffic to other streets.

Can increase trip lengths.

Special Considerations:

- Has little or no effect on speeds for through vehicles.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Estimated Cost:

- \$5,000 to \$10,000 each.

INTERSECTION BULB-OUT

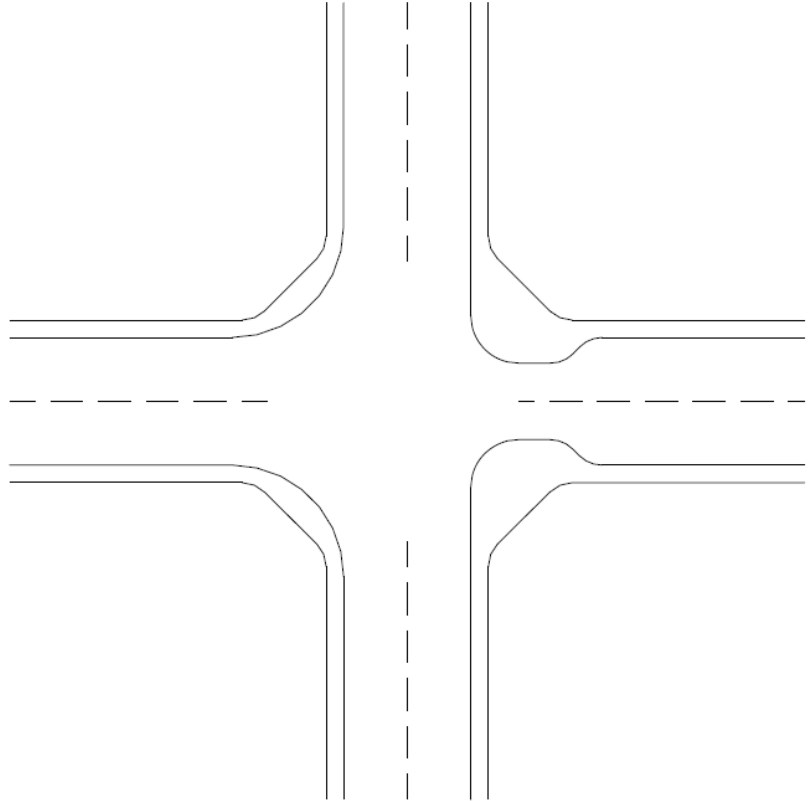
Phase 2/3

Description:

Intersection bulb-outs narrow the street by extending the curbs toward the center of the roadway.

Application:

Used to narrow the roadway and to create shorter pedestrian crossings. They also influence driver behavior by changing the appearance of the street.



Advantages:

Improve pedestrian visibility.
Shorter pedestrian crossing width.
May reduce vehicle speeds.
Opportunity for landscaping.

Disadvantages:

May require parking removal.
May create hazard for bicyclists.
May create drainage issues.
Impacts large vehicle turns.

Special Considerations:

- Intersection bulb-outs at transit stops enhance service.
- May require landscape maintenance to preserve sight distances.

Estimated Cost:

- \$10,000 to \$20,000 each.

CURB RADIUS REDUCTION

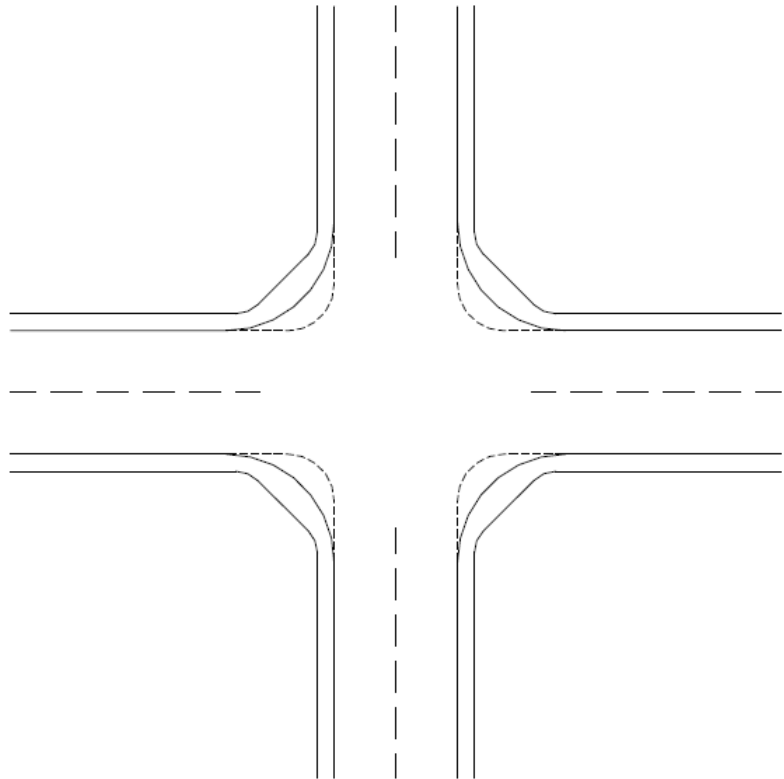
Phase 2/3

Description:

Removal of existing larger radius curb returns at an intersection and construction of smaller radius curb returns.

Application:

Curb radius reductions slow vehicle turning speeds and shorten pedestrian crossing distance.



Advantages:

Shorter pedestrian crossing width.
Slower vehicle turning speeds.
Opportunity for landscaping.

Disadvantages:

Impacts large vehicle turns.

Special Considerations:

- Careful attention needs to be given to drainage issues and turning radii.

Estimated Cost:

- Varies

REALIGNED INTERSECTION

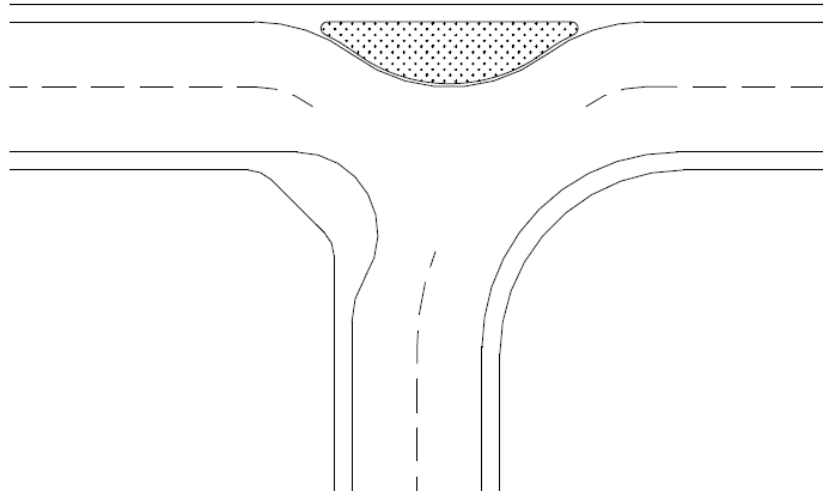
Phase 2/3

Description:

"T" intersections are realigned/modified by constructing horizontal deflection which forces previous straight-through movements to make slower turning movements.

Application:

Realigned intersections help reduce vehicle speeds.



Advantages:

Reduces vehicle speeds.

No significant impact on emergency and transit service.

May discourage through traffic.

Opportunity for landscaping.

Disadvantages:

Removal of parking required.

Increased maintenance.

May divert traffic to other streets.

Special Considerations:

- Reduces vehicle speeds near intersection.
- May change STOP sign configuration and affect emergency response times.
- Careful attention needs to be made to drainage issues.

Estimated Cost:

- \$10,000 to \$20,000 each.

ROUNABOUT

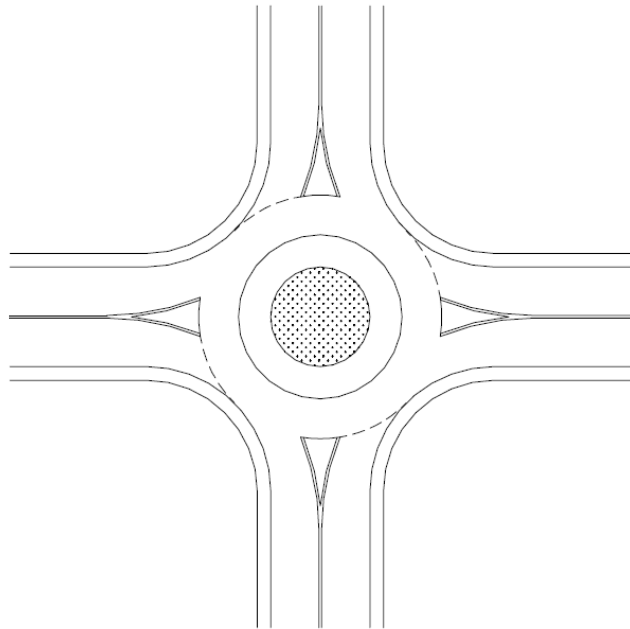
Phase 2/3

Description:

Roundabouts are large radius raised circular islands installed at an intersection in lieu of a traffic signal or STOP sign. Roundabouts reduce vehicle speeds and delay at an intersection.

Application:

Roundabouts reduce vehicle speeds and delay at an intersection.



Advantages:

Effectively reduces vehicle speeds.

Reduces collision potential.

Better side-street access.

Opportunity for landscaping.

Disadvantages:

Parking removal required.

May increase bicycle/automobile conflicts.

Requires additional right-of-way.

Expensive.

Special Considerations:

- Retrofitting a roundabout at an existing intersection would require obtaining additional right-of-way and removal of existing curb returns.
- Curbside parking must be prohibited in advance of the roundabout.
- Requires the installation of signs and pavement markings.

Estimated Cost:

- \$50,000 to \$75,000 each (construction only/does not include right-of-way costs).

DIAGONAL DIVERTER

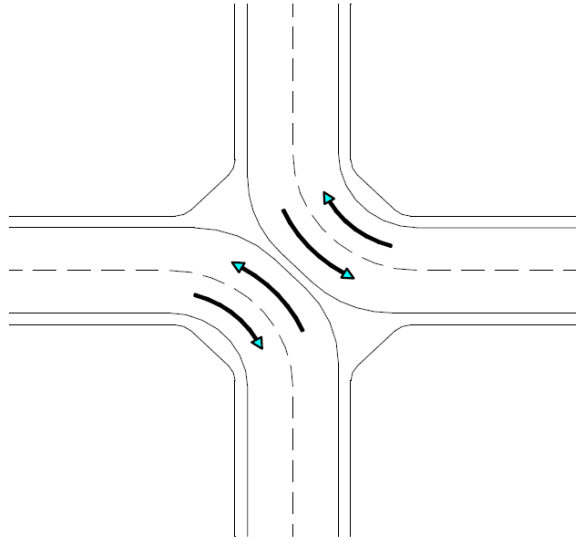
Phase 2/3

Description:

Diagonal diverters are raised areas placed diagonally across a four-legged intersection. They prohibit through movements by creating two "L" shaped intersections.

Application:

Diagonal diverters reduce traffic volumes. They also minimally decrease speeds near the intersection.



Advantages:

Reduces cut-through traffic.
Self-enforcing.
Reduces vehicle conflicts.
Opportunity for landscaping.

Disadvantages:

Increases out of direction travel.
Increases trip lengths.
Impedes emergency vehicles.

Special Considerations:

- Can be designed to allow emergency vehicle access.
- Can be designed to allow pedestrian and bicycle access.
- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.

Fire Department Evaluation:

This measure requires extensive evaluation of the specific location and impacts to emergency response times.

Estimated Cost:

- \$15,000 to \$35,000 each.

TEXTURED PAVEMENT

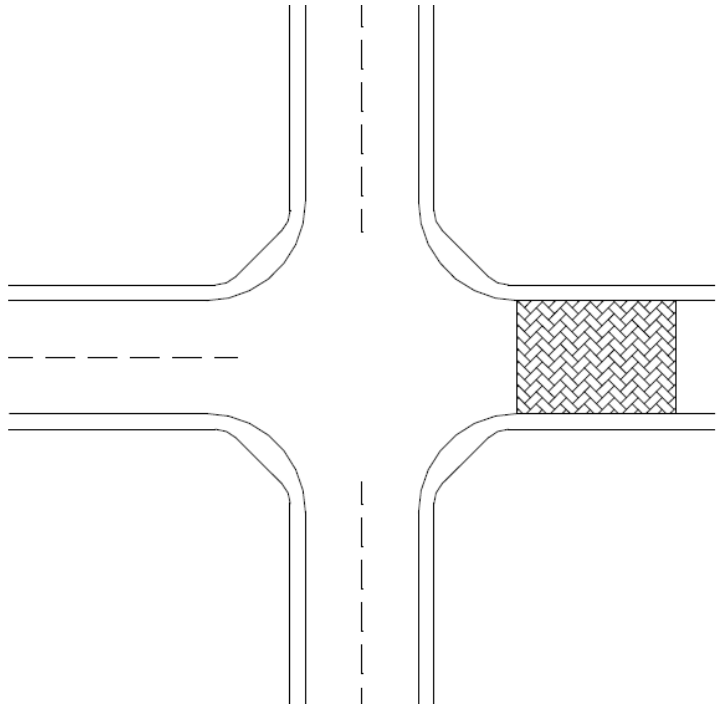
Phase 2/3

Description:

Textured pavement is installed in the roadway typically to provide an entry statement to the neighborhood.

Application:

Used as a visual cue for drivers to slow down.



Advantages:

Aesthetic/visual enhancement.

Provides entry statement to traffic calmed area.

Disadvantages:

Increase in maintenance.

Increase in noise.

Expensive.

Special Considerations:

- Textured pavement has minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally influenced.

Estimated Cost:

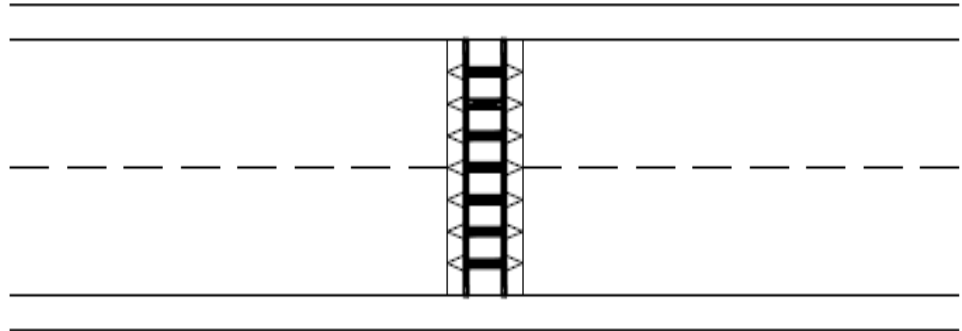
- \$7 per square foot.

RAISED CROSSWALK

Phase 2/3

Description:

Raised crosswalks are constructed 3 to 4 inches above the elevation of the street. They have ramps on the approaches with a flat section in the middle.



Application:

Raised crosswalks help reduce vehicle speeds at pedestrian crossing locations.

Advantages:

Reduces vehicle speeds.
Enhances pedestrian safety.
Access not affected.

Disadvantages:

May increase noise.
Drainage modifications may be required.
Requires special signing and markings.
Emergency response times affected.

Special Considerations:

- Crosswalk elevation needs to be lower than the sidewalk to alert visually impaired that it is a crosswalk.
- Careful attention needs to be made to drainage issues.
- Work well in combination with curb extensions and curb radius reductions.

Fire Department Evaluation:

This measure is least acceptable to the Fire Department and its use requires extensive evaluation of the specific location and impacts to emergency response times.

Estimated Cost:

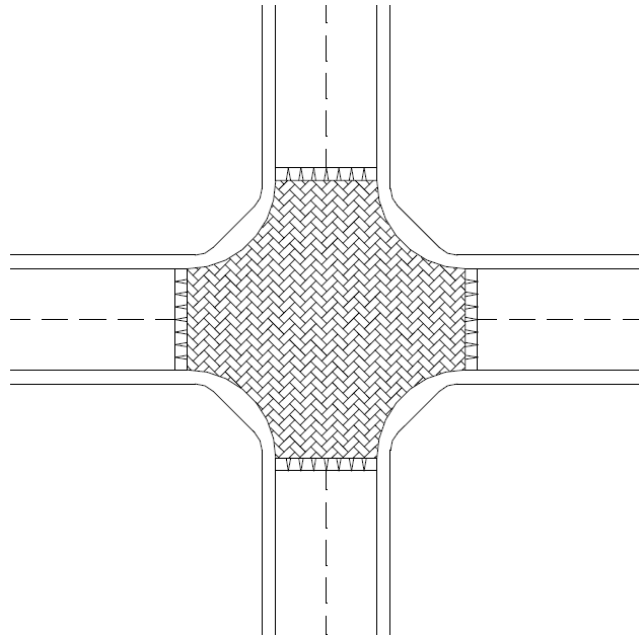
- \$5,000 to \$10,000 each.

RAISED INTERSECTION

Phase 2/3

Description:

A raised intersection is a flat, raised area covering an entire intersection. There are ramps on all approaches. The plateau is generally about 4" high. Typically, the raised intersection is finished with textured pavement.



Application:

Raised intersections reduce vehicle speeds and provide for safer pedestrian crossings.

Advantages:

- Effectively reduces vehicle speeds.
- Enhances pedestrian safety.
- Can be aesthetically pleasing.

Disadvantages:

- Expensive to construct and maintain.
- Requires drainage modifications.
- Affects emergency vehicle response time.
- May require bollards around corners.

Special Considerations:

- Makes intersections more pedestrian-friendly.
- Special signing is required.

Fire Department Evaluation:

This measure is least acceptable to the Fire Department and its use requires extensive evaluation of the specific location and impacts to emergency response times.

Estimated Cost:

- \$35,000 to \$80,000 per intersection.

NEIGHBORHOOD SIGNS

Phase 2/3

Description:

Neighborhood signs involve the use of special signs such as "ENTERING A TRAFFIC CALMED NEIGHBORHOOD" to increase motorists awareness.

Application:

Neighborhood signs help reduce speeding on residential streets.



Advantages:

May increase driver awareness.
May cause drivers to slow down.
Low cost of installation.

Disadvantages:

May have no lasting effect.
Can create false sense of security.
Adds to sign clutter.
Increased cost of sign maintenance.
Not a standard Caltrans sign.

Special Considerations:

- Installed at entry points to a neighborhood.

Estimated Cost:

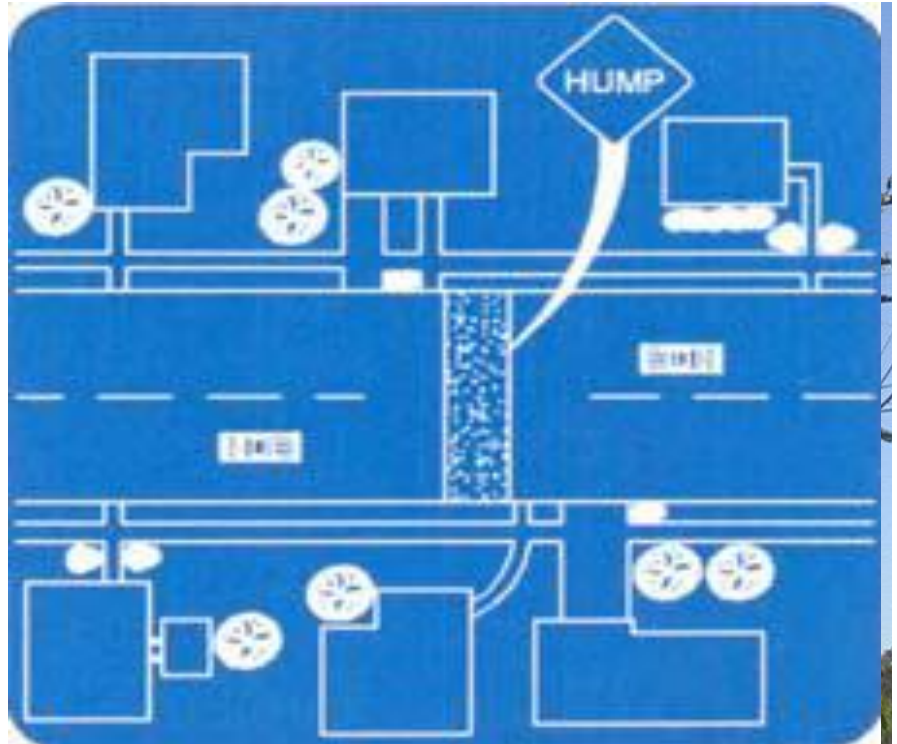
- \$125 per sign.

SPEED HUMPS

Phase 2/3

Description:

Speed humps are rounded raised areas placed across the roadway. They are generally 10 to 14 feet long, making them distinct from the shorter “speed bumps” found in many parking lots, and are 3 to 4 inches high. They are often tapered to be circular, parabolic, or sinusoidal. They are often tapered as they reach the curb on each end to allow for unimpeded drainage. An alternative form of speed hump involving the installation of three-dimensional roadway images to create the impression of the existence of a physical speed hump could be considered for use as well.



Application:

Speed humps help to reduce vehicle speeds.

Advantages:

Speed Humps are relatively inexpensive.

They are relatively easy for bicycles to cross if emergency designed appropriately.

They are very effective in slowing travel speeds.

Disadvantages:

They cause a "rough ride" for all drivers, and can cause severe pain for people with certain skeletal disabilities.

They force large vehicles, such as vehicles and those with rigid suspensions, to travel at slower speeds.

They may increase noise and air pollution.

They have questionable aesthetics.

Estimated Cost:

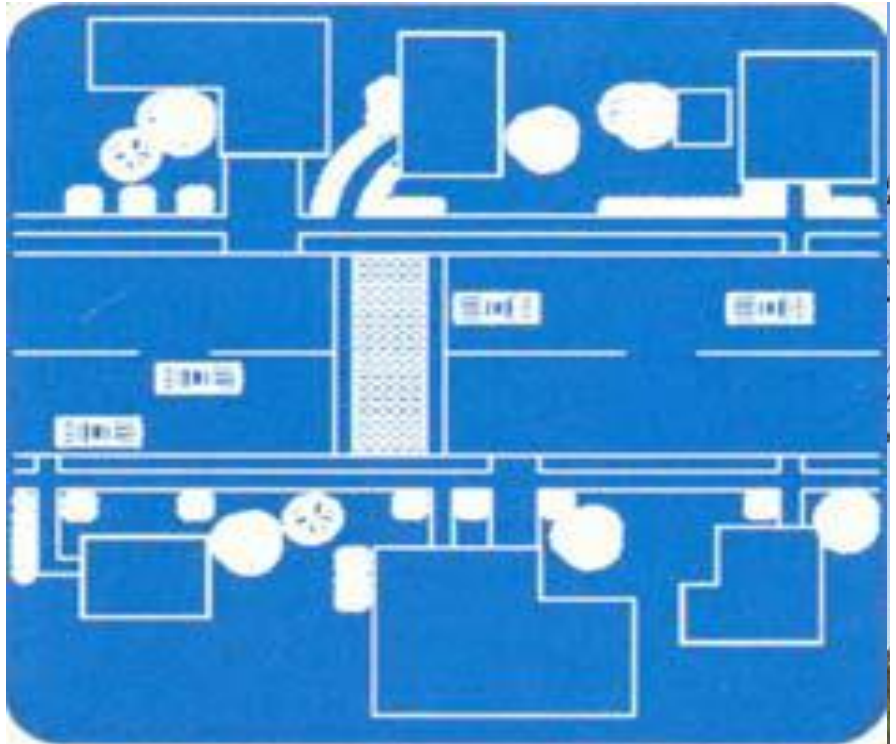
- \$3000 per hump.

SPEED TABLES

Phase 2/3

Description:

Speed tables are flat-topped speed humps often constructed with brick or other textured materials on the flat section. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on the flat section. Their long flat fields, plus ramps that are sometimes more gently sloped than Speed Humps, give speed tables higher design speeds than Speed Humps. The brick or other textured materials improve the appearance of speed tables, draw attention to them, and may enhance safety and speed-reduction.



Application:

Speed Tables help to reduce vehicle speeds. Good for locations where low speeds are desired but a somewhat smooth ride is needed for larger vehicles

Advantages:

They are smoother on large vehicles (such as fire trucks) than Speed Humps.

They are effective in reducing travel speeds, extent of Speed Humps.

Disadvantages:

They have questionable aesthetics if no textured materials are used.

Textured materials can be though not to the expensive.

They may increase noise and air pollution.

Estimated Cost:

- \$3000 per table.

SPEED CUSHIONS

Phase 2/3

Description:

Speed cushions consist of 3 inch high asphalt humps. The length of the cushions is about 10 feet. The spaces between the cushions allow emergency vehicles to straddle the device

Application:

Speed Cushions help to reduce vehicle speeds. They are more effective if used in a series spaced 300 to 500 feet apart or in conjunction with other traffic calming devices.



Advantages:

Can reduce vehicle volumes.

No restriction on on-street parking.

Does not restrict access to residents.

Requires minimal maintenance.

Minimal impact to emergency response times.

Disadvantages:

May divert traffic to parallel streets that do not have traffic calming measures.

May increase emergency response times.

Not aesthetically pleasing.

They may increase noise and air pollution.

Estimated Cost:

- \$3000 per cushion.